

The Use of Numbers in American Sign Language

American Sign Language Utah Valley State College

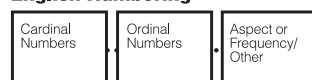
After this workshop, you will

Better understand:

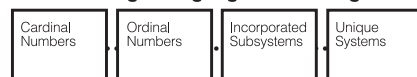
- 1) the differences in English and ASL numerical systems
- 2) how to express numbers in ASL's unique numbering systems

1) So what are the differences?

English Numbering



American Sign Language Numbering



English numbering systems include:

- *Cardinal* numerals, or counting numbers: 1, 2, 3, etc.
- *Ordinal* numerals, or numbers that refer to a place: 1st, 2nd, 3rd, etc.
- an *aspect* or frequency system: "single" "double," "once," "twice," etc.

ASL numbering systems include:

- *Cardinal* numerals:
 - a) counting numbers (1, 2, 3)
 - b) approximations (@300)
- *Ordinal* numerals:
 - a) placement, rank, order (8th, 22nd)
 - b) temporal (November 8th)
- *Incorporated* subsystems
 - a) money (cents)
 - b) calendar
 - c) time units
 - d) sports
- *Unique* systems
 - a) time of day
 - b) measurements
 - c) pronominals
 - d) money (dollars)
 - e) age

2) a. ASL's cardinal numbers: Counting numbers: 0–1 billion

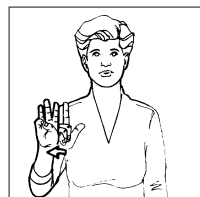


Figure 2a: The cardinal number 26

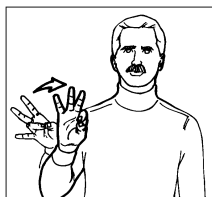


Figure 2b: The cardinal number 79



Figure 2c: The cardinal number 103



Figure 2d: 'approximately 30'

- *Numbers 0–10*
 - a) numbers 1–5: palm faces toward signer, 6–9: palm faces away
- *Numbers 11–30*
 - a) numbers 11–15: palm faces toward signer, 16–19: numbers formed as compounds (10+6, 10+7, etc.)
 - b) numbers 20–29 (not 22): 'L' hand-shape is used to represent 2X, derived from FSL counting system; 26–29 formed as compounds ('L'+6, 'L'+7, etc.); figure 2a
- *Numbers 30–99 & multiples of 100*
 - a) numbers formed as compounds (3+5, 8+4, etc.)
- *Multiples of 11*
 - a) same number is repeated, hand-shape bounces twice (2+2, etc.)
- *Combinations of 6, 7, 8, 9*
 - a) numbers 67, 68, 69, 76, 78, 79, 86, 87, 89, 96, 97, 98 utilize a rolling action of the hand to emphasize the signer's thumb position; figure 2b
- *Emphasis of multiples of 100*
 - a) numbers 100–900 require a sharp, singular movement plus facial expression
- *Numbers 101–109*
 - a) zero is clearly shown (1+C+0+3, etc.); figure 2c
- *Colloquial/Regional approximation or emphasis signs for multiples of 10 (30–80)*
 - a) numbers 30, 40, 50, 60, 70, 80: do not follow book format, instead use first digit and "rock" or "bounce" the number to indicate the multiple of ten ('rocking' 3 = 30, 'bouncing' 5 = @50, etc.); figure 2d

2) b. ASL's cardinal numbers: Approximations



Figure 2e: 'about 100'

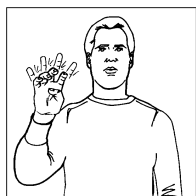


Figure 2f: 'approximately 400'

Generally, approximations are given by one of the following movements plus an 'uncertain' facial expression, denoting estimation.

- *Use of APPROXIMATELY*
 - a) sign the number then add APPROXIMATELY; figure 2e

- *Use of wiggling*
 - a) most often, but not exclusively, used with age, sign the cardinal number, then shake it to denote 'approximate.'
 - b) with multiples of 100, wiggled fingers can designate 'about'; figure 2f

3) a. ASL's ordinal numbers: Placement, rank, or order



Figure 3a: The ordinal number 'fifth'



Figure 3b: 'third out of five'

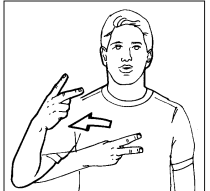


Figure 3c: 'second place'



Figure 3d: 'fourth one down'

- *Explaining position of something in a ordered set or group, placement, rank, or order*
 - a. Numbers 1st-9th—cardinal number facing out is rotated down; *figure 3a*
 - b. Numbers 10th-up—cardinal number is signed plus #ST, #ND, #TH (341+#ST, 52+#ND, 45+#TH, etc.)
- *Sequence of events*
 - a. index finger of dominant hand counts on fingers of non-dominant hand; *figure 3b*
- *Rank/order in family/group: common to explain family/group dynamics based on birth or other chronological order*
 - a. point to corresponding number finger on non-dominant hand (3rd out of 5, second oldest, etc.)
- *Date/temporal expression*
 - a. Fingerspell month first: J-A-N, F-E-B, M-A-R, A-P-R, M-A-Y, J-U-N-E, J-U-L-Y, A-U-G, S-E-P-T, O-C-T, N-O-V, D-E-C
 - b. Days 1-9—use ordinal number (S-E-P-T 8th, J-A-N 6th, etc.)
 - c. Days 10-31—use cardinal number, no 'th' or 'st' is added (J-U-L-Y 27, O-C-T 12, etc.)
- *Placement and scores: use ordinal numbers to express who places where in a competition*
 - a. Placing 1st-9th—cardinal number is made with a horizontal movement (first place, sixth place, etc.); *figure 3c*
 - b. Placing 10th-up—use rule for explaining position or rank ('#ST, #ND, #TH, etc.)
- *Geographical locations and streets*
 - a. Street numbers 1st-9th—ordinal number is used (8th Street NE, 3rd Ave.)
 - b. Street numbers 10th-up—cardinal number is used; 'nd' or 'th' information is implied in the number (24 #ST, 37 #AVE)
- *Spatial location and descriptions: object is either in a horizontal or vertical row*
 - a. 4th HAT, 9TH FLOOR, etc.; *figure 3d*

4) a. ASL's incorporated subsystems: Using cardinal or ordinal numerals for various categories



Figure 4a: '55 cents'



Figure 4b: 'four months'



Figure 4c: 'five to three'

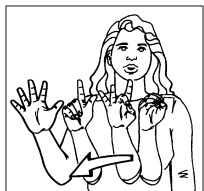


Figure 4d: The number 0825

- *Money: expressing change or "cents"*
 - a. cents formed as compounds (CENT+1, CENT+8, etc.); index finger of number touches brow; *figure 4a*
 - b. exception: cents that begin with 9s; index finger first touches brow, then form NINE (CENT+(index) 94)
 - c. can spell C-E-N-T-S (45 C-E-N-T-S)
- *Time Units*
 - a. Time units follow the "rule of nine"—cardinal numerals 1-9 are incorporated into the time unit's sign; for signs incorporating numerals 10 or higher, sign the number then the sign for the time unit
 - b. Seconds: cardinal number is given, then fingerspelled S-E-C
 - c. Minutes: 1-9: follow "rule of nine"; minutes using 10 or more: 1) cardinal number plus sign (15+MINUTE), 2) cardinal number plus fingerspelled M-I-N (25 M-I-N)
 - d. Hours: 1-9: follow "rule of nine"; hours using 10 or more: 1) cardinal number plus sign (13+HOUR), 2) cardinal number plus fingerspelled #HRS (24+#HRS)
- *Calendar Units*
 - a. Days/Weeks: 1-9: follow "rule of nine"; days/weeks using 10 or more: 1) cardinal number plus sign (15+DAY/WEEK), 2) cardinal number plus fingerspelled D-A-Y-S/W-E-E-K-S (25 D-A-Y-S/W-E-E-K-S)
 - b. Months: 1-9: follow "rule of nine"; months using 10 or more: 1) cardinal number plus sign (15+MONTH); *figure 4b*
 - c. Years: Do not follow "rule of nine", but note that YEAR is truncated and does not follow traditional book form.
- *Duration: ASL uses emphasis, extra motion, and expression to accomplish a feeling of length or duration. Examples: expressing words like "whole," "long," "XX years," etc.*
- *Frequency: repetition of time unit signs indicates "every"*
- *Sports*
 - a. Baseball positions: 1B, 2B, 3B
 - b. Time periods: THIRD I-N-N-I-N-G, FOURTH Q, etc.

(c-e tend to use numbers with the palm facing signer, similar to cardinal counting numbers 1-5)

 - c. Jersey numbers: cardinal numbers are placed on front of chest, simulating uniform number placement (7-on-chest = Number 7, etc.)
 - d. Scoring: scoring signs use spatial placement to differentiate teams; 1) if 1st/2nd person narrative, 1st person on body, 2nd person in appropriate spatial area; 2) if 3rd person narrative, teams are indicated in signer's space then numbers are placed in appropriate spaces; *figure 4c*
 - e. Win/Loss records: follow same format as (d): wins first, losses second, move towards dominant hand
- *Identification numbers: do not represent quantities, are signed differently*
 - a. 3-digit numbers: signed as X I XX (social security numbers, phone numbers, etc.)
 - b. 4 digit numbers: signed as XX I XX (social security numbers, phone numbers, years); *figure 4d*
 - c. 5-digit numbers: signed as XX I X I XX (addresses, streets)

5) a. ASL's unique numbering sub-systems: time, measurements, pronominals, money, and age

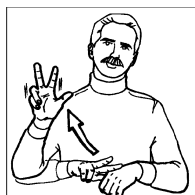


Figure 5a: 'three o'clock'

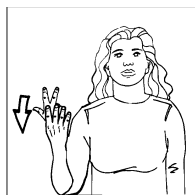


Figure 5b: 'three-fourths/quarters'

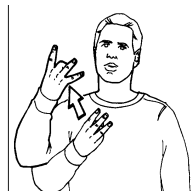


Figure 5c: 'six feet eight inches'



Figure 5d: 'the four of us'

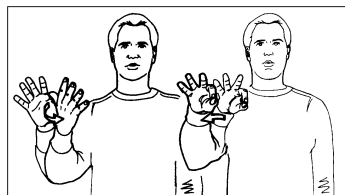


Figure 5e: 'five dollars and 99 cents'

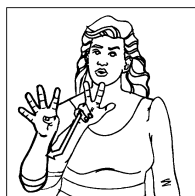


Figure 5f: '34 years old'

- *Telling time ("o'clock", i.e. 9:00)*
 - a. Time numbers are formed as compounds, the sign for TIME plus the cardinal number (TIME+4, etc.); *figure 5a*
 - b. Sign may originate from finger or hand on non-dominant wrist (indicating TIME); if hand is used, "rule of nine" is in effect, time numbers 10-12 use index finger then number (TIME(index)+10, etc.)
 - c. Cardinal numbers 1-5 are formed palm out, not like counting numbers
- *Telling time (hour & minutes, i.e. 11:35)*
 - a. To form the hour, same rules apply as above; minute numbers are signed as compounds, (TIME 11+35, TIME 2+43, etc.)
- *Year and date signs*
 - a. Year/date numbers are signed as 4 digit numbers: XX I XX (19+77, 17+76, etc.)
 - b. Generally speaking, sign for double zero is one-hundred (14+C, 17+C, etc.)
 - c. colloquial reference to years: "19" is dropped, last two digits signed instead (1972 = 72, 1990 = 90)
 - d. Current debate about years 2000-2009; some experts say 20+0+0, 2+0+0+0, 20+C, even YEAR 2+THOUSAND. Consult your local Deaf community.
- *Measurement: Quantity/Frequency*
 - a. Number of times: use of numbers 1-5 (ONCE, TWICE (double), THREE+TIMES (triple), etc.); 6-up: number plus TIMES; 10: exaggerated movement
 - b. "More": compound sign, cardinal number plus MORE; colloquial usage: MORE incorporated into numbers 1-5
- *Measurement: Fractions*
 - a. Use of space to show numerator (top) and denominator (bottom), hand drops to show denominator ($\frac{3}{4}$ = 3-up, 4-down, etc.); numbers 1-9: palm faces in; numbers 10-up: palm faces out; *figure 5b*
- *Measurement: Super/Subscripts*
 - a. Super or subscripts: use of space to show superscript (up) or subscript (down), hand raises or drops to show which (H_2O = 2-down, etc.); numbers can be formed palm facing in or out
- *Measurement: Decimals*
 - a. Numbers like GPA or software versions, cardinal numbers are signed, separated by POINT, formed with index finger (3.4, 7.0, etc.)
- *Measurement: Height*
 - a. Similar to win/loss records: feet first, inches second, move towards dominant hand; numbers formed by palm facing in; *figure 5c*
- *Measurement: Length, volume, weight, and temperature*
 - a. Use cardinal (counting) numbers plus fingerspelled abbreviations of English equivalents (ft, m, mm, km, tb, oz, pt, qt, gal, ml, tsp, lb, C, F, etc.)
 - b. degrees expressed by sign TEMPERATURE
- *Pronominalization*
 - a. ASL incorporates numbers with pronouns to express concepts like "X-of-us" or "X-of-them" (TWO-OF-US, etc.) Uses "rule of five"; numbers 6-up must use cardinal number plus sign US (6 + US, 8 + THEM, etc.); *figure 5d*
 - b. ASL incorporates numbers with classifiers to express concepts like group interaction or object relationships: "four people coming here" or "three trees next to two cars"; Uses "rule of five"; numbers 6-up must use cardinal number plus sign (6 + TREE, 8 + PEOPLE, etc.)
- *Money: expressing dollars and cents*
 - a. Similar to ordinal numbers; \$1-\$9—cardinal number facing out is rotated down
 - b. \$10-up—cardinal number is signed plus DOLLAR (\$10: number 10 rolls like (a) but DOLLAR is also signed)
 - c. Dollars and cents: for totals *under* \$10, rule from (a) applies; number of cents is also signed, dropping sign CENT or fingerspelled C-E-N-T-S; cents is implied in the context (\$5+33, \$8+75, etc.); *figure 5e*
 - d. Dollars and cents: for totals *over* \$10, as in English, signs for DOLLAR and CENT are dropped and cardinal numbers are signed—both are implied in the context (\$11+50, etc.)
- *Age*
 - a. Like time numbers, age numbers are formed as compounds; cardinal number is compounded with the sign for AGE, formed at the chin (AGE+4, etc.)
 - b. Ages 1-8, 21-up (but not 90s): sign originates with index finger of the cardinal number touching the chin and moving away to neutral space; *figure 5f*
 - c. Ages 9-20, 90-99: sign originates with index finger first touching chin, then moving to neutral space with cardinal number
 - c. "X days old": follows rules of time units plus DAY(S) OLD (7+DAYS OLD)
 - d. "X months old": follows same rules as (c), (5+MONTHS OLD)